



## A review of the soldierfish genus *Ostichthys* (Beryciformes: Holocentridae), with descriptions of two new species from Myanmar

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### Abstract

The twelve species in the genus *Ostichthys* are reviewed and two new species are described from bottom trawls taken off the coast of Myanmar: *O. convexus* from 116–129 m and *O. daniela* from 121–129 m. Both species have 3½ scales above the lateral line to the middle of the spinous dorsal fin, 28 or 29 lateral-line scales, the last dorsal-fin spine shorter than the penultimate spine, the height of the suborbital bone below the center of eye less than half of the orbit diameter, 13 lower gill rakers, 16–17 pectoral-fin rays, and the snout length 6.2–6.8 in head length; additionally both lack a nasal spine extending beyond the median upper lip and lack a spine at the corner of the preoperculum. The two new species differ from each other in head shape, length of the caudal peduncle, and fresh coloration. Keys are provided to the genera of Myripristinae and the *Ostichthys* species herein recognized. Photographic documentation of two possible undescribed *Ostichthys* spp. from Myanmar and Fiji is also included.

**Key words:** taxonomy, systematics, ichthyology, coral-reef fishes, Andaman Sea, Myripristinae, Indian Ocean, Indo-Pacific Ocean, *Ostichthys convexus*, *Ostichthys daniela*.

**Citation:** Greenfield, D.W., Randall, J.E. & Psomadakis, P.N. (2017) A review of the soldierfish genus *Ostichthys* (Beryciformes: Holocentridae), with descriptions of two new species from Myanmar. *Journal of the Ocean Science Foundation*, 26, 1–33.

**doi:** <http://dx.doi.org/10.5281/zenodo.344964>

**urn:lsid:zoobank.org:pub:CD01A5EE-EAAA-49B3-908E-CE7B079907DD**

**Date of publication of this version of record:** 2 March 2017

## Introduction

The genus *Ostichthys* Jordan & Everman, 1896 is classified in the family Holocentridae and the soldierfish subfamily Myripristinae, which includes *Corniger* Agassiz, 1831; *Myripristis* Cuvier, 1829; *Plectrypops* Gill, 1862; and *Pristilepis* Randall, Shimizu & Yamakawa, 1982. *Ostichthys* is represented by 12 previously described valid species in the Indian, Pacific, and western Atlantic Oceans, usually from waters deeper than 90 m, with some being taken as deep as 640 m. *Ostichthys* is distinguished from those other genera by having well-developed nasal bones which extend anteriorly to the median upper lip, a long, narrow premaxillary groove, 29 vertebrae, and the vomerine teeth in a subtriangular to elliptical patch.

Randall *et al.* (1982) reviewed the genus, describing four new species and providing a key to *Ostichthys* *acanthorhinus* Randall, Shimizu & Yamakawa, 1982; *O. archiepiscopus* (Valenciennes, 1862); *O. delta* Randall, Shimizu & Yamakawa, 1982; *O. hypsipterygion* Randall, Shimizu & Yamakawa, 1982; *O. japonicus* (Cuvier, 1829); *O. kaianus* (Günther, 1880); *O. sandix* Randall, Shimizu & Yamakawa, 1982; and *O. trachypoma* (Günther, 1859). Subsequently, Randall & Wrobel (1988) described *O. ovaloculus* from Tahiti; Chen *et al.* (1990) reviewed the species occurring in Taiwan and described *O. sheni*; and Randall & Myers (1993) described *O. brachygnathus* from Guam and Saipan. Randall & Heemstra (in press) elevated *O. hypsipterygion sufensis* Golani, 1984 from subspecific to species status as *O. sufensis*.

In 2015, the EAF-Nansen Project of FAO conducted a trawl survey using the R/V *Dr. Fridtjof Nansen* off the coast of Myanmar. During these cruises, specimens in the genus *Ostichthys* that the third author recognized as possibly undescribed were collected. He photographed the specimens, took tissue samples, and preserved specimens. We determined that the specimens included two new species that are described here. He also photographed and took measurements and counts of a large specimen (which was subsequently lost) that we are calling *O. cf. japonicus*.

The species in *Ostichthys* fall into two basic phenetic groups: those with 3½ scales above the lateral line to the middle of the spinous portion of the dorsal fin, and those with 2½ scales. The new species described here have 3½ scales and are compared to others in that group: *O. acanthorhinus*, *O. hypsipterygion*, *O. japonicus*, *O. ovaloculus*, *O. sandix*, *O. sheni*, and *O. sufensis*.

## Materials and Methods

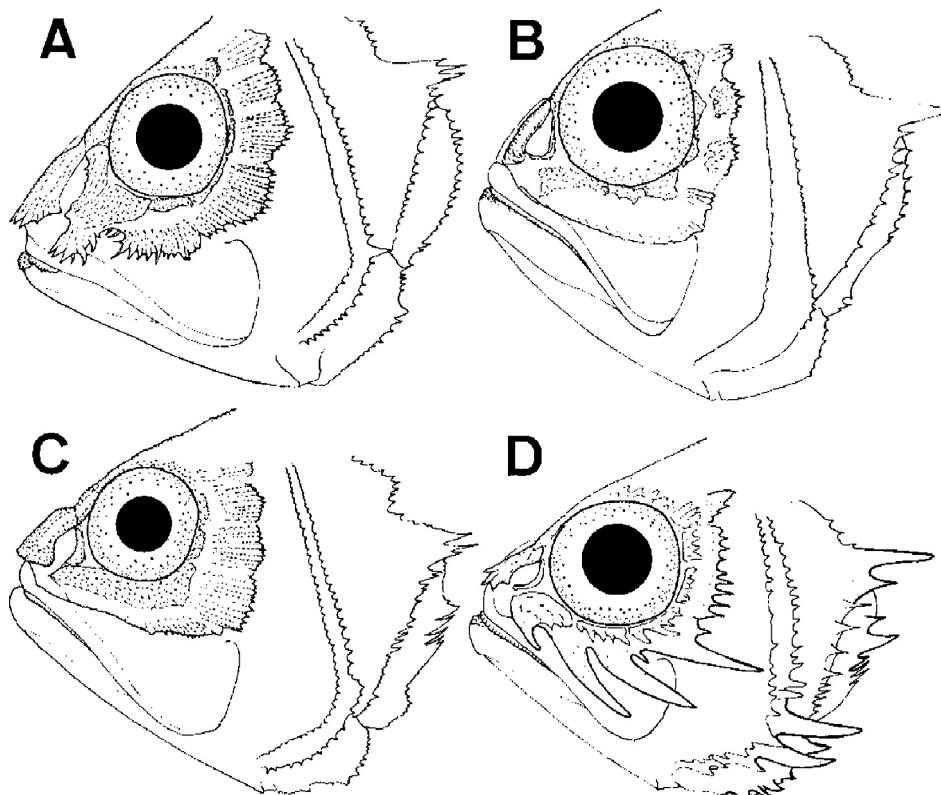
Counts and measurements follow Randall *et al.* (1982). Counts of gill rakers were made on the first gill arch. The count of the rakers of the upper limb is given first, followed by the lower-limb count: the raker at the angle is included in the lower-limb count. The scales dorsally on the body adjacent to the dorsal fin are about ½ to ¾ the height of the scales of the row below. In counting the rows of scales above the lateral line to the base of the spinous portion of the dorsal fin the uppermost row is recorded as ½. When no method of length measurement is indicated, standard length (SL) is implied. This length was taken from the most anterior point of the snout (generally the lateral part of the upper jaw, as this is notably anterior to the medial part of the upper lip on these fishes, though on juveniles the front of the nasal bones may be most anterior) to the base of the caudal fin. Head (HL) and snout length measurements were also taken to the most anterior point of the snout. Care was taken to close mouths of specimens completely before making these measurements or adjusting for protruding upper jaws if the mouths could not be closed. The posterior point for HL measurements was the end of the opercular membrane, not the opercular spine, because there is too much variation in spine length. Upper-jaw length was measured from the most posterior point of the maxilla to the middle of the front of the upper lip. Length of the

caudal peduncle is the horizontal distance between rear base of anal fin and base of caudal fin. Caudal concavity is the horizontal distance between verticals at the distal ends of the longest and shortest caudal rays. Dorsal-fin spines were measured to the edge of the uppermost scales of the back, not to the extreme base. Dorsal-fin spines of *Pristilepis* and *Ostichthys* are significantly longer in smaller individuals; thus a difference in relative spine length may not be of significance unless specimens of equal or near equal size are compared. Dorsal soft rays and anal-fin spines and rays, on the other hand, were measured to the base of these elements (usually detectable when a bright light is transmitted from behind or by radiographs).

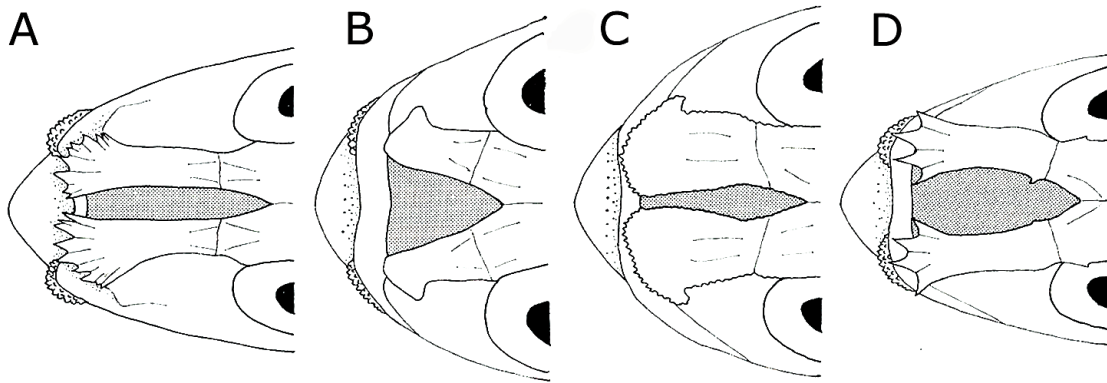
Proportional measurements in Table 1 are given as a percentage of the standard length. The most important of these measurements are expressed in the text of the descriptions as quotients of standardized larger body parts, rounded to the nearest 0.1. In the descriptions of the new species, the data in parentheses apply to paratypes, if different from the holotype. Line drawings used in this paper are from Randall *et al.* (1982) and were drawn by T. Shimizu. Types of the new species have been deposited at the Bishop Museum, Honolulu, Hawai'i (BPBM).

### Key to the genera of Myripristinae

- 1a. Dorsal-fin spines XI, notch completely dividing dorsal fin between spines X and XI; lower-limb gill rakers 19–32; scales finely to moderately ctenoid .....*Myripristis*
- 1b. Dorsal-fin spines XII (except *O. ovaloculus* & *O. delta* with XI); dorsal fin continuous, though deeply notched between spinous and soft portions; lower-limb gill rakers 11–18; scales coarsely ctenoid .....2
- 2a. Two enlarged spines at corner of preoperculum; first to third suborbital bones with greatly enlarged posteriorly directed spines (Fig. 1D) .....*Corniger*
- 2b. No large spine at corner of preoperculum; first to third suborbital bones without enlarged posteriorly directed spines .....3

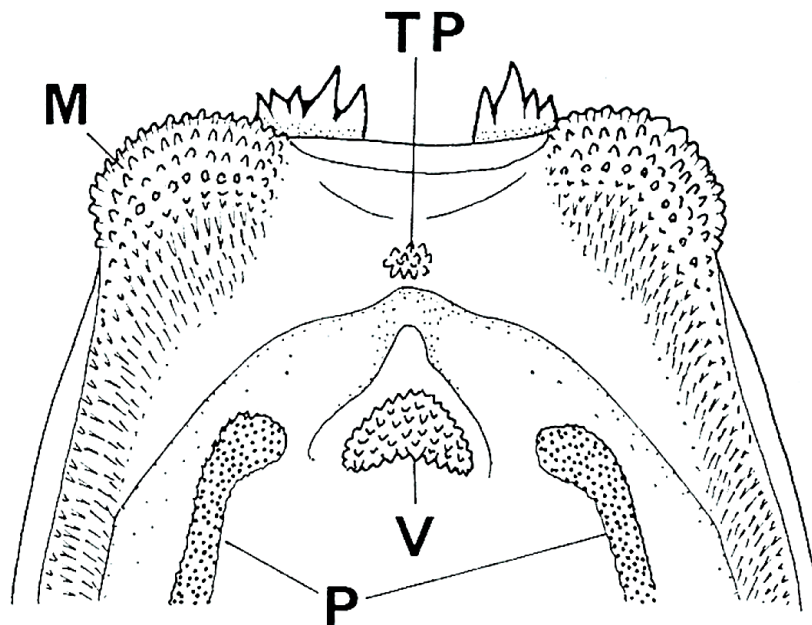


**Figure 1.** Side view of the heads of four genera to show the shape of the nasal bone and the serrations and/or spinations of the suborbital bones and opercular bones: A) *Pristilepis oligolepis*; B) *Ostichthys japonicus*; C) *Plectrypops lima*; D) *Corniger spinosus* (Randall *et al.* [1982]).



**Figure 2.** Top view of the heads of four genera to show the shape of the premaxillary groove (dotted area): A) *Pristilepis oligolepis*; B) *Ostichthys japonicus*; C) *Plectrypops lima*; D) *Corniger spinosus* (Randall *et al.* [1982]).

- 3a. Premaxillary groove broadly V-shaped (Fig. 2B) .....*Ostichthys*
- 3b. Premaxillary groove rhomboidal (Fig. 2A, C, D) .....4
- 4a. Lateral-line scales 28–30; first suborbital bone with a sharp spine overhanging upper jaw (Figs. 1A & 2A); a small tooth patch on medial face of premaxillary symphysis (Fig. 3) .....*Pristilepis*
- 4b. Lateral-line scales 32–42; first suborbital bone without spine overhanging upper jaw (Fig. 1C); no tooth patch on medial face of premaxillary symphysis .....*Plectrypops*

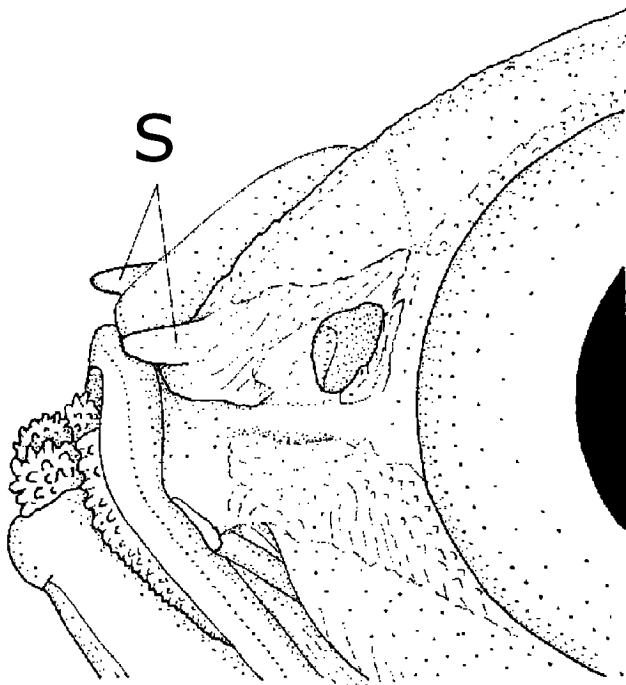


**Figure 3.** Ventral view of the palate of *Pristilepis oligolepis*: M) maxilla; P) palatine teeth; TP) tooth patch on medial face of upper jaw symphysis; V) vomerine teeth (Randall *et al.* [1982]).

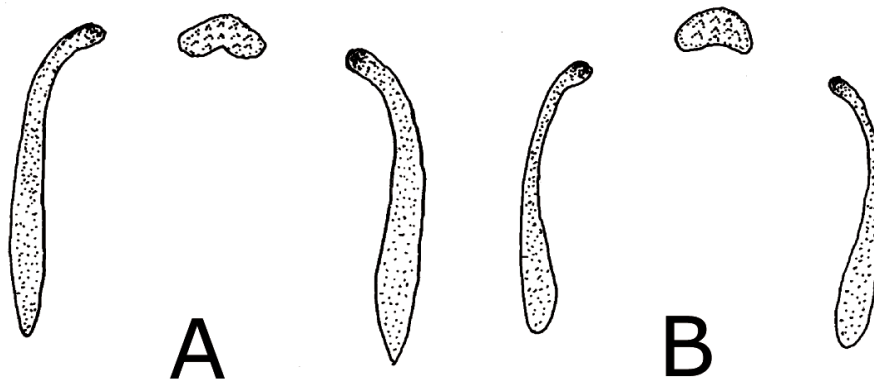


## Key to the species of *Ostichthys*

- 1a. Scales above lateral line to middle of spinous portion of dorsal fin  $3\frac{1}{2}$  .....2
- 1b. Scales above lateral line to middle of spinous portion of dorsal fin  $2\frac{1}{2}$  ..... 10
- 2a. Anterior nasal bone with a sharp spine beyond median upper lip (Figs. 4 & 8); a spine at corner of preoperculum larger than other spinules [Gulf of Oman, Arabian Sea, Bay of Bengal to Bali, Indonesia] ...  
..... *O. acanthorhinus*
- 2b. Anterior nasal bone without spine beyond median upper lip; no spine at corner of preoperculum .....3
- 3a. Lateral-line scales 38; dorsal-fin elements XI,16 [Tahiti] ..... *O. ovaloculus*
- 3b. Lateral-line scales 28–30; dorsal-fin elements XII,12–14 ..... 4
- 4a. Height of second suborbital bone below center of eye about  $\frac{1}{2}$  eye-diameter; last dorsal-fin spine 2–3 times longer than penultimate spine; median prepelvic scales 9 [Andaman Sea, western Pacific from Japan to Australia, east to Fiji] ..... *O. japonicus*
- 4b. Height of second suborbital bone below center of eye about  $\frac{1}{3}$  eye diameter; last dorsal-fin spine shorter or equal to penultimate spine; median prepelvic scales 10–12 ..... 5
- 5a. Lower gill-rakers 15–16; pectoral-fin rays 16–17, mostly 16 .....6
- 5b. Lower gill-rakers 11–13; pectoral-fin rays 15–16, mostly 15 ..... 7



**Figure 4.** Oblique anterodorsal view of the nasal area of the holotype of *Ostichthys acanthorhinus*: S) nasal spine (Randall *et al.* [1982]).



**Figure 5.** Schematic drawing of the palatine and vomerine tooth patches of *Ostichthys sufensis* (A) and *O. hypsipterygion* (B) (modified from Fig. 2 from Golani [1984]).

- 6a. Caudal-peduncle depth 4.2–4.4 in HL; longest dorsal-fin spine 2.2–2.3 in HL [Hawaiian Islands] ..... *O. sandix*
- 6b. Caudal-peduncle depth 4.7–4.9 in HL; longest dorsal-fin spine 1.9–2.3 in HL [Taiwan] ..... *O. sheni*
- 7a. Pectoral-fin rays 15; snout length 4.8–5.6 in HL ..... 8
- 7b. Pectoral-fin rays 16–17; snout length 6.2–6.8 in HL ..... 9
- 8a. Anterior ends of palatine-tooth patches reaching level of vomerine-tooth patch (Fig. 5a) [Red Sea] ..... *O. sufensis*
- 8b. Anterior ends of palatine-tooth patches not reaching level of vomerine-tooth patch (Fig. 5b) [Japan] ..... *O. hypsipterygion*
- 9a. Head slopes more steeply, lower margin of maxilla to top of eye about 2.2 in HL; caudal-peduncle length 8.3% SL; body red with distinct white lines along body [Myanmar] ..... *O. daniela*, n. sp.
- 9b. Head more convex, lower margin of maxilla to top of eye 1.6–2.0 in HL; caudal peduncle length 10.5–12.1% SL; body red and silver with faint white lines [Myanmar] ..... *O. convexa*, n. sp.
- 10a. Origin of anal fin beneath soft portion of dorsal fin; upper procurrent spiniform caudal-fin rays 5 and lower rays 4 ..... 11
- 10b. Origin of anal fin beneath spinous portion of dorsal fin; upper procurrent spiniform caudal-fin rays 4 and lower rays 3 ..... 12
- 11a. Dorsal-fin spines XI; patch of teeth on vomer nearly triangular; head length 2.5–2.65 in SL [Reunion and Samoa] ..... *O. delta*
- 11b. Dorsal-fin spines XII; patch of teeth on vomer V-shaped; head length about 2.45 in SL [Guam] ..... *O. brachygnathus*

- 12a. One half scale directly anterior to upper half of first pored scale of lateral line; pectoral-fin rays 14–16 (modally 15); lateral-line scales 28–30 (modally 29) .....13
- 12b. No half scale anterior to first pored scale of lateral line; pectoral-fin rays 15–17 (modally 16); lateral-line scales 28–30 (modally 28) [western Pacific and Indian Oceans] .....*O. kaianus*
- 13a. Last dorsal-fin spine equal to or shorter than penultimate spine and not closely applied to soft portion of fin; dorsal profile of head straight; snout not short, 3.7–4.3 in HL; gill rakers 7–9 + 13–15 [Hawai‘i, Japan, and Mascarene Islands] .....*O. archiepiscopus*
- 13b. Last dorsal-fin spine longer than penultimate spine and closely applied to soft portion of fin; dorsal profile of head moderately convex; snout short, 4.6–5.6 in HL; gill rakers 8–11 + 14–17 [western Atlantic Ocean] .....*O. trachypoma*

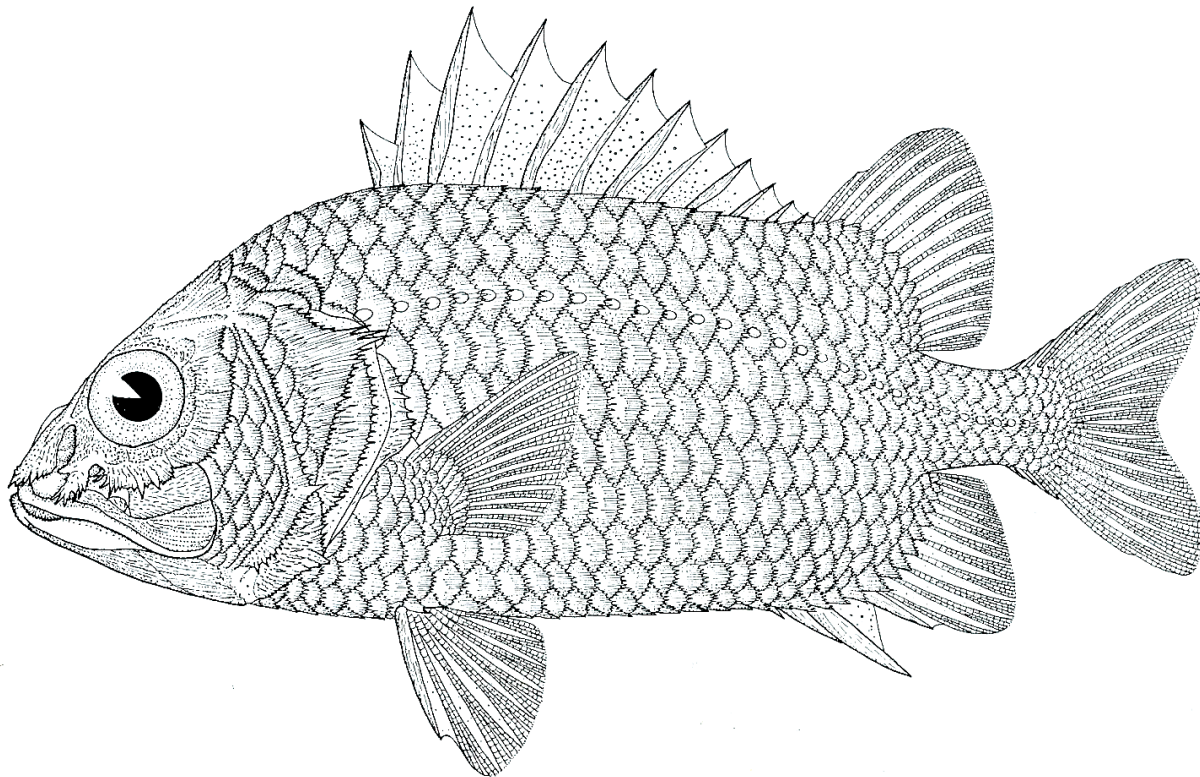
***Ostichthys acanthorhinus* Randall, Shimizu & Yamakawa, 1982**

Spinysnout Soldierfish

Figures 4, 6–8.

*Myripristis kaianus* [non Günther] Tholasilingam, Venkataraman & Krishna Kartha 1964: 277 (off Alappuzha, Kerala, SW coast of India).

**Holotype.** FMNH 70251, 178.0 mm SL, Gulf of Oman, Indian Ocean.



**Figure 6.** *Ostichthys acanthorhinus*, holotype, FMNH 70251, 178.0 mm SL, Gulf of Oman (Randall *et al.* [1982]).





**Figure 7.** *Ostichthys acanthorhinus*, fresh photograph, Karachi, Pakistan (H.B. Osmany).

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $3\frac{1}{2}$ ; anterior end of each nasal bone with a sharp forward-directed spine; a spine at corner of preoperculum. Dorsal profile of head uniformly convex; pectoral-fin rays 16 or 17 (usually 16); lateral-line scales modally 29; gill rakers 10–12 + 16–18; last dorsal-fin spine slightly longer than penultimate spine; depth of body 2.0–2.1 in SL; head length 2.2–2.3 in SL; snout short, 5.15–6.0 in HL; least depth of caudal peduncle 4.6–5.05 in HL. Color when fresh entirely red with no white markings.

**Distribution.** Recorded from the Red Sea, the northern Indian Ocean from the Arabian Sea to Myanmar, and throughout Indonesia to the northern coast of Australia. Depth range 200–600 m.



**Figure 8.** *Ostichthys acanthorhinus*, fresh photograph, nasal spine, Karachi, Pakistan (H.B. Osmany).

## *Ostichthys archiepiscopus* (Valenciennes, 1862)

### Straighthead Soldierfish

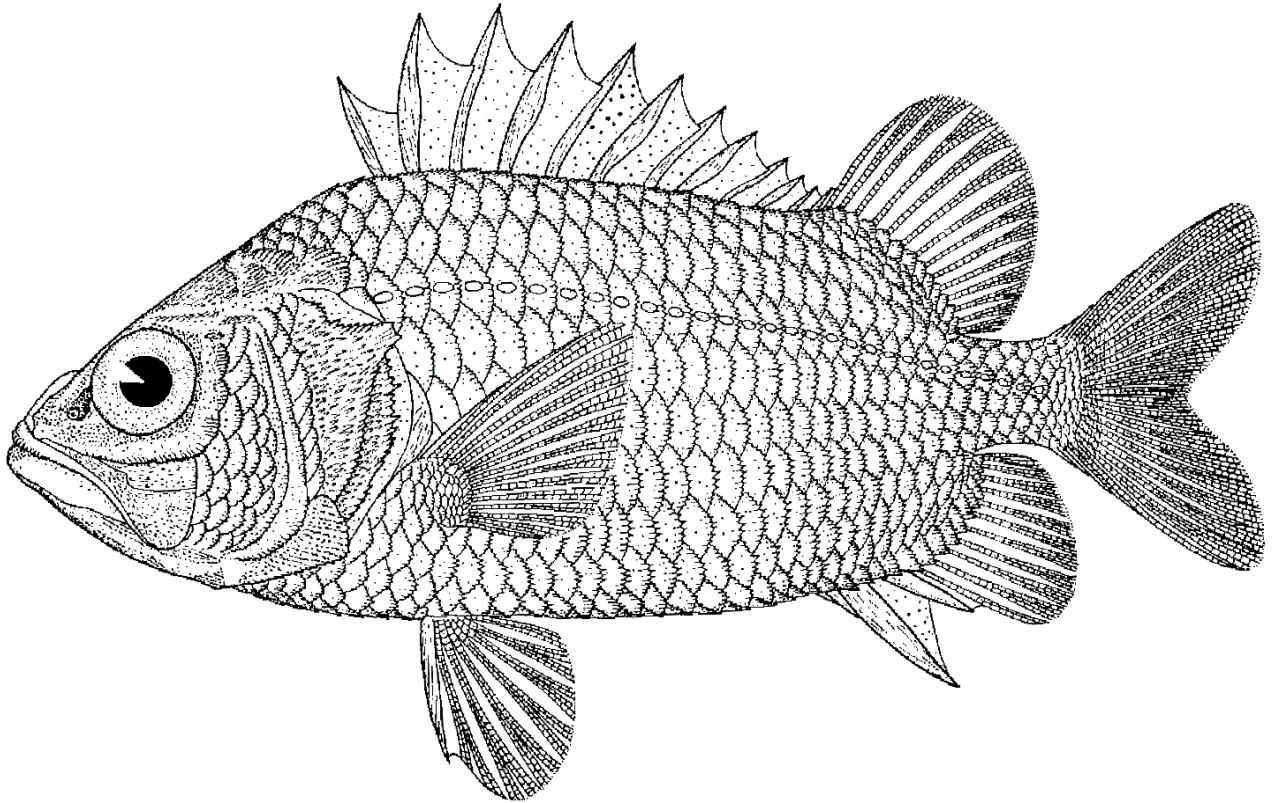
Figures 9 & 10.

*Myripristis archiepiscopus* Valenciennes, 1862: 1169 (type locality, Île Bourbon = Réunion, Mascarene Islands).

*Myripristis pillwaxii* Steindachner, 1893: 215, pl. 1 (type locality, Honolulu, Hawai'i, USA).

**Holotype.** MNHN A. 8095, 255 mm SL, Réunion, Mascarene Islands, Indian Ocean.

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $2\frac{1}{2}$ ; dorsal-fin spines XII, dorsal-fin soft rays modally 14; upper procurrent spiniform caudal-fin rays 4 and lower rays 3; origin of anal fin beneath spinous portion of dorsal fin; lateral-line scales 28–30 (usually 29). Dorsal profile of head straight; pectoral-fin rays 14–16 (modally 15); gill rakers 7–9 + 13–15; last two dorsal-fin spines about equal in length or last slightly shorter; space between last dorsal-fin spine and first dorsal-fin ray about half as broad as space between last two dorsal-fin spines; depth of body 2.1–2.35 in SL; head relatively short, 2.45–2.6 in SL; snout long for genus, 3.7–4.7 in HL; depth of caudal peduncle 3.8–4.7 in HL. Color when fresh red with a faint whitish longitudinal banding following scale rows.



**Figure 9.** *Ostichthys archiepiscopus*, HUMZ 63048, 197.0 mm SL, Okinawa, Japan (Randall *et al.* [1982]).





**Figure 10.** *Ostichthys archiepiscopus*, fresh photograph, BPBM 8777, 179 mm SL, Hawaiian Islands (J.E. Randall; from Plate 2C from Randall *et al.* [1982]).

**Distribution.** Recorded from a few widely scattered locations: Réunion and Mauritius in the western Indian Ocean, the Ryukyu Islands and Ogasawara Islands in Japan, French Polynesia (Tahiti and Moorea in the Society Islands), and the Hawaiian Islands. Depth range 90–400 m.



## *Ostichthys brachygnathus* Randall & Myers, 1993

### Shortjaw Soldierfish

Figure 11.

**Holotype.** BPBM 35052, 156 mm SL, Guam, Mariana Islands, USA.

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $2\frac{1}{2}$ ; origin of anal fin beneath soft portion of dorsal fin; upper procurrent spiniform caudal-fin rays 5 and lower rays 4; Dorsal-fin elements XII,12, last spine shortest; V-shaped patch of teeth on vomer; head length 2.45 in SL. Dorsal profile of head nearly straight, becoming slightly convex on nape; pectoral-fin rays 16; lateral-line scales 27; gill rakers 8 + 15; anal-fin rays V,9 (holotype appears aberrant in having a fifth anal-fin spine); maxilla not reaching a vertical at posterior margin of orbit; depth of body 2.35 in SL; snout length 4.45 in HL; caudal peduncle very slender 5.05 in HL. Color when fresh solid red, the centers of scales lighter red than edges.

**Distribution.** Known only from Guam and Saipan. Depth range to at least 230 m.



**Figure 11.** *Ostichthys brachygnathus*, fresh photograph, holotype, BPBM 35052, 156 mm SL, Guam (R.F. Myers; Fig. 1 from Randall & Myers [1993]).

*Ostichthys convexus*, n. sp.

Roundhead Soldierfish

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Figures 12 & 13; Table 1.

**Holotype.** BPBM 41327, 164.3 mm SL, Myanmar, off Tanintharyi coast, 13°3.21' N, 96°41.62' E, 121–129 m, trawl station 123, 21 May 2015.

**Paratype.** BPBM 41328, 127.4 mm SL, Myanmar, off Ayeyarwady Delta coastal region, 14°10.26' N, 95°2.55' E, 116 m, trawl station 81, 12 May 2015.

**Diagnosis.** A species of *Ostichthys* with 3½ scales above lateral line to middle of spinous portion of dorsal fin, anterior nasal bone without a spine extending beyond median upper lip, no spine at corner of preoperculum, 28–29 lateral-line scales, height of suborbital bone below center of eye about 1/4–1/3 of eye diameter, last dorsal-fin spine shorter than penultimate spine, 16–17 pectoral-fin rays, lower gill rakers 13 including rudiments, 4 opercular scale rows, distance from lower edge of maxilla to top of eye 1.6 in HL, and length of third anal-fin spine 2.6 in HL. Color when fresh pinkish red on dorsal half of head and body, ventral half silvery.

**Description.** Dorsal-fin elements XII,13, first ray unbranched; anal-fin elements IV,11, all rays branched; pectoral-fin rays 17 (16), upper two and lower one unbranched; pelvic-fin elements I,7, branched caudal-fin rays 16; upper spiniform procurrent caudal-fin rays 4; lower spiniform procurrent caudal-fin rays 3; lateral-line scales



**Figure 12.** *Ostichthys convexus*, fresh photograph, holotype, BPBM 41327, 164.3 mm SL, Myanmar (P.N. Psomadakis).





**Figure 13.** *Ostichthys convexus*, fresh photograph, paratype, BPBM 41328, 127.4 mm SL, Myanmar (P.N. Psomadakis).

29 (28); no half scale anterior to upper half of first pored scale; scales above lateral line to origin of dorsal fin 4,  $3\frac{1}{2}$  scales below dorsal-fin spine II to XI; scales below lateral line to origin of anal fin 8; median predorsal scales 5 (6); median prepelvic scales about 12; gill rakers 8 + 13 (including rudiments).

Body moderately deep, depth 2.0 (2.1) in SL, and compressed, width 2.2 in depth; head length 2.3 (2.6) in SL; dorsal profile of head convex; snout short, 6.8 (6.2) in HL; eye large, orbit diameter 2.8 (2.5) in HL; interorbital space slightly convex, width narrow, 7.8 (6.3) in HL; caudal peduncle slender, least depth 4.5 (4.4) and length 3.5 (3.6) in HL.

Mouth large, lower jaw slightly projecting, gape diagonal, maxilla extending to a vertical just past postorbital bones (just anterior to hind margin of eye); posterior end of maxilla broad, combined height of maxilla and supramaxilla 3.6 (3.7) in HL; upper-jaw length 1.8 (1.6) in HL; teeth in villiform bands in jaws broader anteriorly; thickened knob-like anterior end of lower jaw fitting into a toothless gap at symphysis of upper jaw when mouth is closed; villiform teeth on vomer in a V-shape, with apex anterior; villiform teeth in a narrow band on palatines, anterior end of which curves medially not reaching vomerine patch; tongue edentate; narial fossa large, oval-shaped, slightly below center of orbit; gill rakers moderate length, longest at angle 1.9 (1.7) in orbit diameter

External bones of head rugose, ridged and spiniform; free margins of suborbitals, postorbitals, opercle, subopercle, interopercle, double margin of preoperculum and lower edges of lower branchiostegals rays with numerous spinules; a prominent spine posteriorly on opercle, extending well beyond opercular membrane; no spine at corner of preoperculum; suborbital depth below center of eye 2.9 (3.3) in orbit diameter; length of longest postorbital bone about 2.8 (3.2) in orbit diameter.

Scales coarsely ctenoid, 11 to 18 ctenii on scales in holotype; strong ridges on posterior surface of scales; scales dorsally on head extending forward to a vertical to upper end of preopercular margin; preoperculum with 4 diagonal rows of scales; spinous portion of dorsal fin without scales; soft portion and anal fin with a basal scaly

sheath, scales not adhering to fins; pectoral fins with small scales basally; basal scales of caudal larger; pelvic fins with large V-shaped scale between fins and smaller scales to each side on base.

Dorsal and anal-fin spines with strong striations; origin of dorsal fin over posterior end of first lateral-line scale; third dorsal-fin spine longest, 1.9 (1.8) in HL; twelfth dorsal-fin spine shortest, its length 7.9 (9.0) in HL and 4.1 (5.0) in longest spine; space between last dorsal-fin spine and first dorsal-fin ray about half as great as space between bases of last two spines; longest dorsal-fin ray, third, 2.3 (2.1) in HL; origin of anal fin below base of eleventh dorsal-fin spine; first anal-fin spine very small; third longest and much stoutest, its length 3.0 (2.6) in HL; longest anal-fin ray, second, 2.3 (2.2) in HL; caudal fin short, 1.8 (1.6) in HL, and forked, caudal concavity 4.7 (4.4) in HL; pectoral fins extending slightly past a vertical at tip of appressed pelvic fins and below ninth dorsal-spine base; fourth ray longest, 1.7 (1.6) in HL.

**Color when fresh.** (Figs. 12 & 13) Dorsal half of body of holotype pinkish red, as is top of head and caudal peduncle. Side of body below lateral line silver. Cheek silver with some red and gold on edge of preoperculum and operculum, opercular membrane dark red, as is pectoral-fin axil. Some pink on snout and tip of lower jaw. Pupil of eye black, iris red. Spinous dorsal fin all light red, soft dorsal and caudal fins somewhat lighter red. Anal fin clear. Pectoral fin pink basally, extending to upper rays. Pelvic fins pink. Smaller paratype considerably darker, almost entirely pinkish red with very faint light lines on scale rows.

**Color in alcohol.** Light tan; membranes, opercular membrane, membrane over premaxillary groove and mucous channels of head light cream.

**Etymology.** The species name is from the Latin *convexus*, meaning convex, referring to the convex front of the head. The specific epithet is treated as masculine singular adjective.

**Distribution.** Known only from Myanmar, off the Tanintharyi coast and Ayeyarwady Delta region. Depth range 116–129 m.

**Comparisons.** The new species *O. convexus* can be distinguished from the other species with 3½ scales between the lateral line and middle of the spinous dorsal fin as follows: *O. acanthorhinus* has an anterior nasal bone with a sharp spine that extends beyond the median upper lip and a spine at the corner of the preoperculum that is larger than the other spinules (vs. both lacking in *O. convexus*); *O. ovaloculus* has 38 lateral-line scales and a dorsal fin with XI,16 elements (vs. 28–29 lateral-line scales and XII,13); *O. japonicus* has the last dorsal-fin spine 2–3 times longer than the penultimate spine and the second suborbital bone below the center of the eye measuring about half the eye diameter (vs. dorsal-fin spines subequal and second suborbital bone one-third of the eye diameter); *O. sandix* and *O. sheni* have 15–16 lower gill rakers (vs. 13); both *O. hypsipterygion* and *O. sufensis* have 15 pectoral-fin rays (vs. 16–17); the palatine teeth in *O. sufensis* reach the level of the vomerine patch (vs. not reaching).

*Ostichthys convexus* also differs from *O. hypsipterygion* in having a shorter snout, 6.1–6.3% vs 7.1–8.7% SL; a shorter third anal-fin spine, 14.1–14.4% vs. 17.2–19.0% SL; a longer caudal peduncle, 10.5–12.1% vs. 8.3–9.6 % SL; and longer pelvic fins, with the pelvic-fin spine 18.9–20.0% vs. 15.0–16.8% SL and the total pelvic-fin length 25.6–28.4% vs. 20.7–23.8% SL.

*Ostichthys convexus* also differs from *O. daniela* in having a shorter third anal-fin spine, 14.1–14.4% vs. 19.4% SL; a longer caudal-peduncle length 10.5–12.1% vs. 8.3% SL (see Table 1). The profile of the head is more convex in *O. convexus* than in *O. daniela*, as reflected in the distance from the lower margin of the maxilla to the top of the eye in HL, i.e. about 2.2 in *O. daniela* vs. 1.6–2.0 in *O. convexus*. In fresh color, the white lines on the body are bolder in *O. daniela*, whereas they are faint or absent in *O. convexus*.

*Ostichthys daniela*, n. sp.

Daniela's Soldierfish

urn:lsid:zoobank.org:act:B6F15DD4-CD1B-47DE-A443-1F94C4D19CFF

Figure 14; Table 1.

**Holotype.** BPBM 41329, 104.6 mm SL, Myanmar, off Tanintharyi coast, 13°3.21' N, 96°41.62' E, 121–129 m, trawl station 123, 21 May 2015.

**Diagnosis.** A species of *Ostichthys* with 3½ scales above lateral line to middle of spinous portion of dorsal fin, anterior nasal bone without a spine extending beyond median upper lip, no spine at corner of preoperculum, 28 lateral-line scales, height of suborbital bone below center of eye about 1/3 of eye diameter, last dorsal-fin spine shorter than penultimate spine, 16 pectoral-fin rays, lower gill rakers 13 including rudiments, 5 opercular scale rows, dorsal profile of head sloping, distance from lower edge of maxilla to top of eye 2.2 in HL, and length of caudal peduncle 8.3% SL. Color when fresh mostly carmine red with white lines running along centers of scales along length of body.

**Description.** Dorsal-fin elements XII,13, first ray unbranched; anal-fin elements IV,11, all rays branched; pectoral-fin rays 16, upper one and lower two unbranched; pelvic-fin elements I,7, branched caudal-fin rays 16; upper spiniform procurent caudal-fin rays 4; lower spiniform procurent caudal-fin rays 3; lateral-line scales 28; no half scale anterior to upper half of first pored scale; scales above lateral line to origin of dorsal fin 4, 3½ scales



**Figure 14.** *Ostichthys daniela*, fresh photograph, holotype, BPBM 41329, 104.6 mm SL, Myanmar (P.N. Psomadakis).

below dorsal-fin spine II to XI; scales below lateral line to origin of anal fin 8; median predorsal scales 5; median prepelvic scales about 11; gill rakers 8 + 13 (including rudiments).

Body moderately deep, depth 2.2 in SL, and compressed, width 2.0 in depth; head length 2.4 in SL; dorsal profile of head sloping, only slightly convex; snout short, 6.5 in head; eye large, orbit diameter 2.8 in head; interorbital space slightly convex, width very narrow, 6.5 in head; caudal peduncle slender, least depth 4.6 and length 5.0 in head

Mouth large, lower jaw slightly projecting, gape diagonal, maxilla extending to a vertical slightly in advance of hind edge of eye; posterior end of maxilla broad, combined height of maxilla and supramaxilla 3.9 in head; upper-jaw length 1.8 in head; teeth in villiform bands in jaws broader anteriorly; thickened knob-like anterior end of lower jaw fitting into a toothless gap at symphysis of upper jaw when mouth is closed; villiform teeth on vomer in a V-shape, with apex anterior; villiform teeth in a narrow band on palatines, anterior end of which curves medially, not reaching vomerine patch; tongue edentate; narial fossa large, teardrop-shaped, slightly below center of orbit; gill rakers moderately long, longest at angle 2.9 in orbit diameter.

External bones of head rugose, ridged and spiniform; free margins of suborbitals, postorbitals, opercle, subopercle, interopercle, double margin of preoperculum and lower edges of lower branchiostegals rays with numerous spinules; a prominent spine posteriorly on opercle, extending well beyond opercular membrane; no spine at corner of preoperculum; suborbital depth below center of eye 3.9 in orbit diameter; length of longest postorbital bone about 3 in orbit diameter.

Scales coarsely ctenoid, 12 to 28 ctenii on scales in holotype; strong ridges on posterior surface of scales; scales dorsally on head extending forward to a vertical slightly anterior to upper end of preopercular margin; preoperculum with 5 diagonal rows of scales; base of operculum with a single row of scales fused; spinous portion of dorsal fin without scales; soft portion and anal fin with a basal scaly sheath, scales not adhering to fins; pectoral fins with small scales basally; basal scales of caudal larger; pelvic fins with large V-shaped scale between fins and smaller scales to each side on base.

Dorsal and anal-fin spines with strong striations; origin of dorsal fin over posterior end of first lateral-line scale; third dorsal-fin spine longest, 1.5 in HL; eleventh dorsal-fin spine shortest, its length 6.5 in HL and 4.4 in longest spine; space between last dorsal-fin spine and first dorsal-fin ray about half as great as space between bases of last two spines; longest dorsal-fin ray, fourth, 2.5 in HL; origin of anal fin below base of last dorsal-fin spine; first anal-fin spine very small; third longest and stout, its length 2.1 in HL; longest anal-fin ray, second, 2.4 in HL; caudal fin small, 1.6 in HL, and forked, caudal concavity 3.8 in HL; pectoral fins extending slightly past a vertical at tip of appressed pelvic fins and below eighth dorsal-spine base; fourth ray longest, 1.7 in head.

**Color when fresh.** (Fig. 14) Background color of head and body carmine red with distinctive white lines running along centers of scales along length of body. Three rows of white lines above lateral line and seven below. Lateral line with purplish tinge. Scales on dorsum below spinous dorsal fin with orange tinge. Operculum dark carmine red, rest of head lighter, particularly lower half. Some gold areas along edge of preoperculum. Pupil of eye black, iris red and brighter than rest of head. Spines and membranes of first dorsal fin pinkish red. Second dorsal, caudal, anal, and pectoral fins lighter red. First anal-fin spine lighter. Pelvic-fin spine light, remainder of fin carmine.

**Color in alcohol.** Light tan; membranes, opercular membrane, membrane over premaxillary groove and mucous channels of head light cream.

**Etymology.** The specific epithet is named for Daniela Basili, the third author's wife, and is treated as a noun in apposition.

**Distribution.** Known only from Myanmar, off the Tanintharyi coast. Depth range 121–129 m.

**Comparisons.** The new species *O. daniela* can be distinguished from the other species with 3½ scales between the lateral line and middle of the spinous dorsal fin as follows: *O. acanthorhinus* has an anterior nasal bone with a sharp spine that extends beyond the median upper lip and a spine at the corner of the preoperculum that is larger than the other spinules (vs. both lacking in *O. daniela*); *O. ovaloculus* has 38 lateral-line scales and a dorsal fin with XI,16 elements (vs. 28 lateral-line scales and XII,13); *O. japonicus* has the last dorsal-fin spine 2–3 times longer than the penultimate spine and the second suborbital bone below the center of the eye ½ the eye diameter (vs. dorsal-fin spines subequal and second suborbital bone one-third of the eye diameter); *O. sandix* and *O. sheni*



have 15–16 lower gill rakers (vs. 13); both *O. hypsipterygion* and *O. sufensis* have 15 pectoral-fin rays (vs. 16); the palatine teeth in *O. sufensis* reach the level of the vomerine patch (vs. not reaching).

The head of *O. daniela* slopes a little more steeply than in *O. hypsipterygion* and *O. convexus*, as reflected in the distance from the lower margin of the maxilla to the top of the eye in HL, i.e. about 2.2 in *O. daniela* vs. 1.6 in *O. hypsipterygion* and 1.6–2.0 in *O. convexus*.

*Ostichthys daniela* also differs from *O. hypsipterygion* in having a shorter snout, 6.3% vs 7.1–8.7% SL; a longer caudal fin 24.9% vs. 20.8–22.0% SL; and greater caudal-fin concavity, 10.8% vs. 8.2–9.1% SL.

*Ostichthys daniela* also differs from *O. convexus* in having a shorter caudal peduncle length 8.3% vs. 10.5–12.1% SL, and in having distinct white stripes on the body vs. less evident in *O. convexus* (Table 1).

TABLE 1

Proportional measurements of type specimens of two new species of *Ostichthys* vs. the range of *O. hypsipterygion*, expressed as percentage of the standard length

	<i>O. daniela</i>	<i>O. convexus</i>	<i>O. convexus</i>	<i>O. hypsipterygion</i>
	holotype	holotype	paratype	Randall <i>et al.</i> 1982
Standard length (mm)	103.6	164.3	127.4	140.8–156.6
Depth of body	46.1	48.9	47.1	38.3–47.1
Width of body	22.6	22.3	21.7	21.1–22.4
Head length	41.3	42.8	38.0	39.2–41.4
Snout length	6.3	6.3	6.1	7.1–8.7
Orbit diameter	15.0	15.1	15.2	13.54–14.9
Interorbital width	6.4	7.8	6.3	5.3–6.8
Upper jaw length	22.9	25.5	23.1	22.5–23.2
Least depth of caudal peduncle	9.0	9.4	8.7	8.9–9.6
Length of caudal peduncle	8.3	12.1	10.5	8.3–9.6
Predorsal length	44.8	41.6	36.4	43.4–44.7
Preanal length	79.3	75.2	70.8	73.2–78.5
Prepelvic length	39.6	36.9	33.3	40.2–42.3
Length of first dorsal spine	12.2	12.8	11.5	9.8–11.1
Length of longest dorsal spine	27.6	22.3	20.8	20.9–22.7
Length of eleventh dorsal spine	6.3	7.1	4.9	6.2–7.6
Length of twelfth dorsal spine	6.6	5.4	4.2	4.8–6.3
Length of longest dorsal ray	16.4	18.9	18.2	19.2–19.3
Length of third anal spine	19.4	14.1	14.4	17.2–19.0
Length of longest anal ray	17.0	18.8	17.5	18.5
Length of caudal fin	24.9	23.7	23.5	20.8–22.0
Caudal concavity	10.8	9.1	8.7	8.2–9.1
Length of pectoral fin	26.0	27.5	26.9	25.0–27.1
Length of pelvic spine	20.0	20.0	18.9	15.0–16.8
Length of pelvic fin	25.6	28.4	25.6	20.7–23.8

*Ostichthys delta* Randall, Shimizu & Yamakawa, 1982

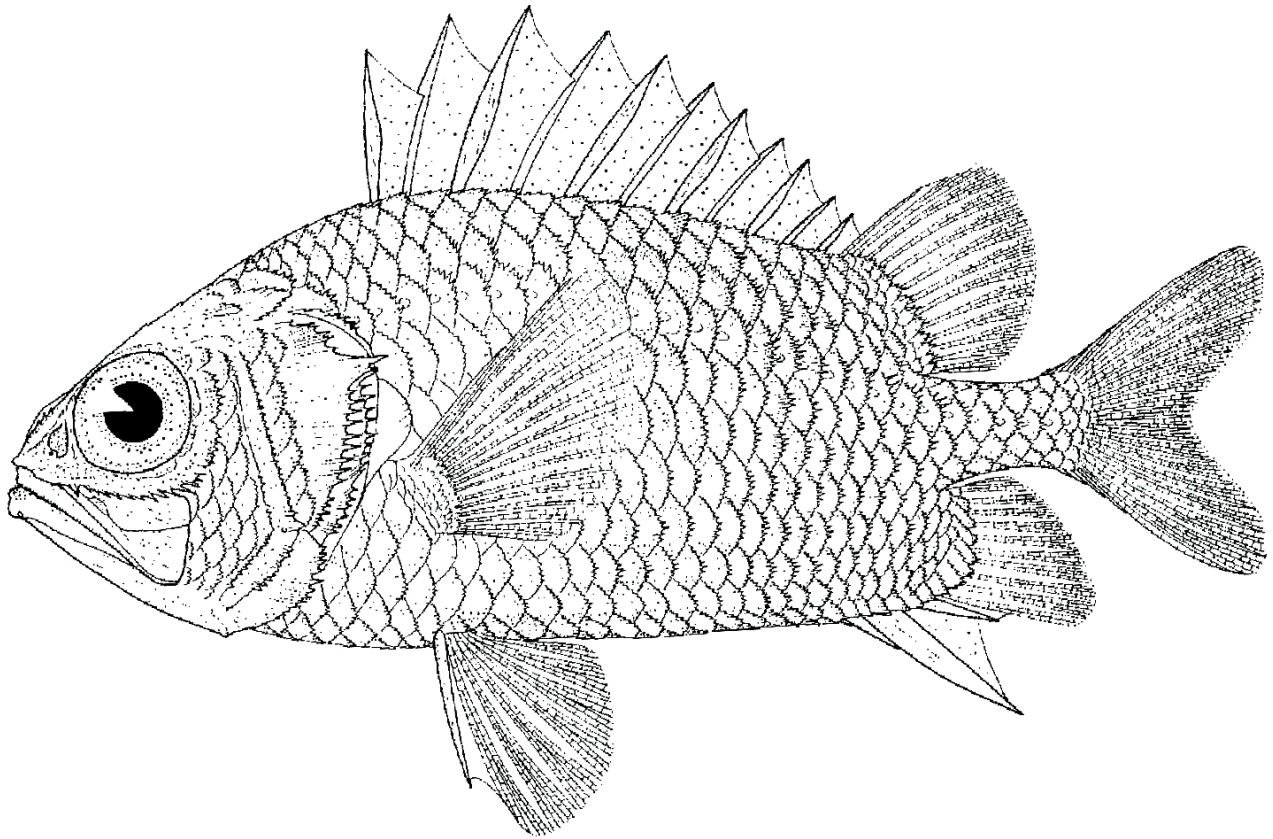
Redcoat Soldierfish

Figure 15.

**Holotype.** BPBM 20050, 150.4 mm SL, Réunion, Mascarene Islands, Indian Ocean.

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $2\frac{1}{2}$ ; origin of anal fin beneath soft portion of dorsal fin; upper spiniform procurrent caudal-fin rays 5 and lower spiniform procurrent caudal-fin rays 4; dorsal-fin spines XI (XII for all other *Ostichthys* except also *O. ovaloculus*); near-triangular patch of teeth on vomer; head length 2.5–2.65 in SL. Dorsal profile nearly straight; pectoral-fin rays 16 or 17; lateral-line scales 27 or 28 (usually 27); gill rakers 7–8 + 13–14; last dorsal-fin spine shortest; depth of body 2.3–2.4 in SL; snout length 4.2–4.8 in HL; caudal peduncle slender, the least depth 4.45–4.75 in HL. Color when fresh uniform red.

**Distribution.** Known from three widely-spaced localities: Réunion, the Comoros, and from American Samoa. Depth range 150–200 m.



**Figure 15.** *Ostichthys delta*, holotype, BPBM 20050, 150.4 mm, Réunion (Randall *et al.* [1982]).

## *Ostichthys hypsipterygion* Randall, Shimizu & Yamakawa, 1982

### Highfin Soldierfish

Figure 5, 16 & 17; Table 1.

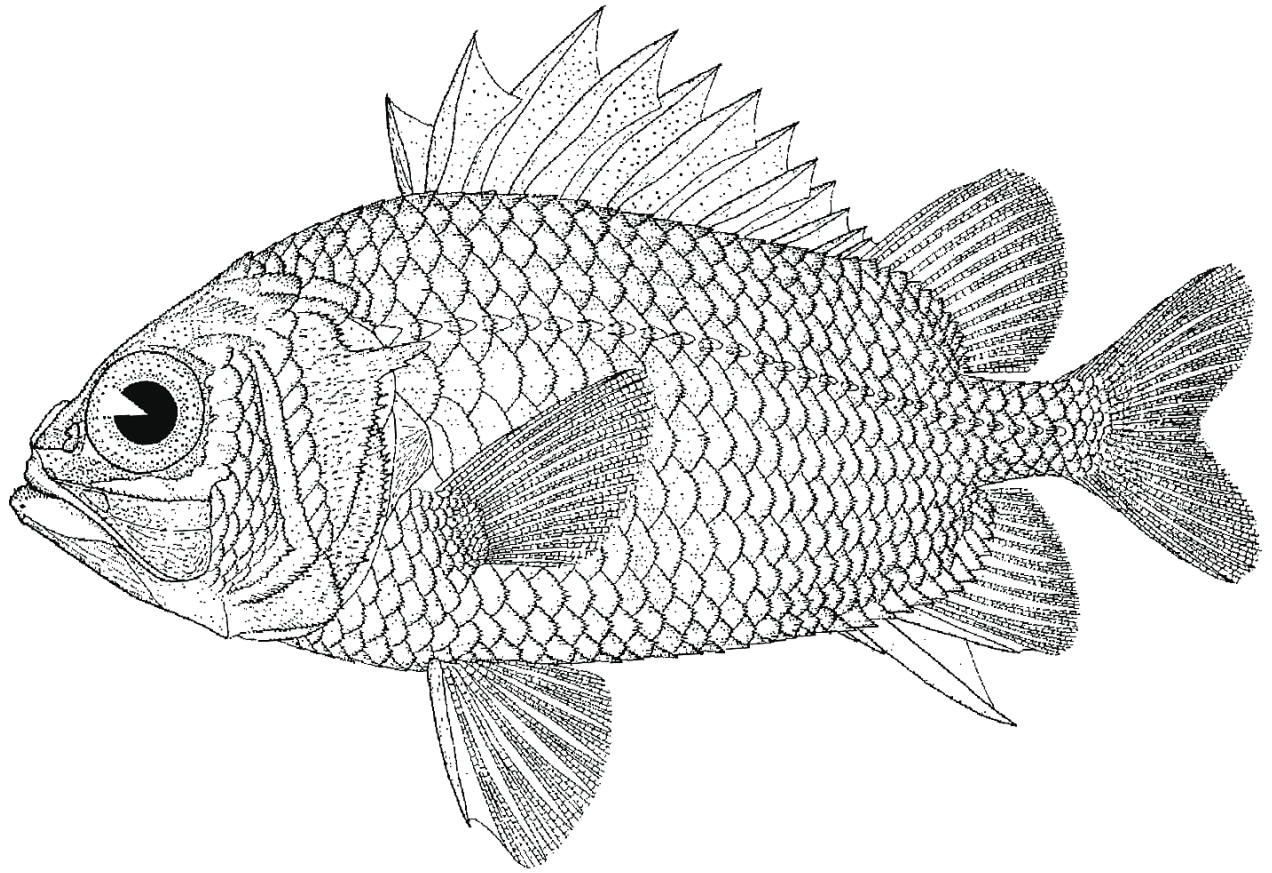
**Holotype.** HUMZ 62836, 147.1 mm SL, Naha City fish market, Okinawa, Japan (perhaps taken from near the island).

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $3\frac{1}{2}$ ; no spine at anterior end of nasal bones of adults; no enlarged spine at corner of preoperculum; lateral line scales 28–29; dorsal-fin elements XII,13; height of second suborbital bone below center of eye about 3.6–4.9 in orbit diameter; last two dorsal-fin spines subequal; median prepelvic scales 12; pectoral-fin rays 15; gill rakers 8 + 13; snout length 4.8–5.6 in HL; anterior end of palatine tooth patches do not reach level of vomerine tooth patches (Fig. 5). Dorsal profile of head slightly convex; depth of body 2.1–2.6 in SL; head length 2.4–2.6 in SL; least depth of caudal peduncle 4.3–4.4 in HL. Color when fresh reddish with a series of relatively narrow silvery white dashes (middle of each scale with a horizontal streak nearly full-width of scale), forming whitish stripes on body.

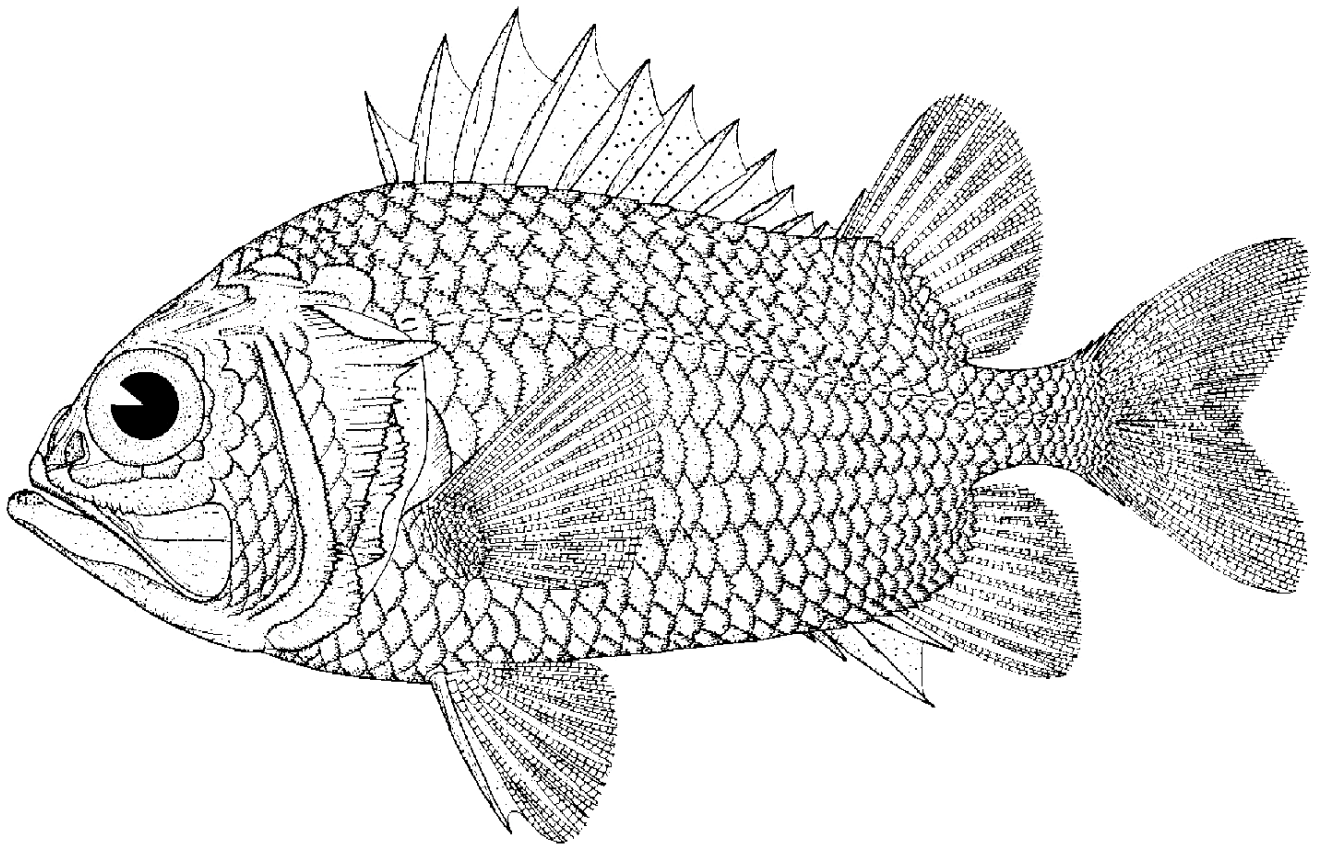
**Distribution.** Known from only two widely spaced localities: Okinawa, Japan and the Chesterfield Islands of New Caledonia. Depth range 270–355 m.



**Figure 16.** *Ostichthys hypsipterygion*, fresh photograph, holotype, HUMZ 62836, 147.1 mm SL, Okinawa, Japan (T. Shimizu; from Plate 2A from Randall *et al.* [1982]).



**Figure 17.** *Ostichthys hypsipterygion*, paratype, BPBM 26362, 140.8 mm SL, Okinawa, Japan (Randall *et al.* [1982]).



**Figure 18.** *Ostichthys japonicus*, HUMZ 62563, 176.3 mm SL, Kochi, Japan (Randall *et al.* [1982]).



## *Ostichthys japonicus* (Cuvier, 1829)

### Japanese Soldierfish

Figures 18 & 19.

*Myripristis japonicus* Cuvier in Cuvier & Valenciennes, 1829: 173, pl. 58 (type locality, Japan)

*Holotrachys major* Whitley, 1950: 33, fig. 5 (type locality, New South Wales, Australia).

**Holotype.** No types known, appeared as name only in Cuvier.

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $3\frac{1}{2}$ ; no spine at anterior end of nasal bone of adults or subadults; no large spine at corner of preoperculum of adults (subadults may have a small spine at angle); lateral-line scales 28–30 (usually 28, rarely 30); dorsal-fin spines XII; height of second suborbital bone below center of eye  $\frac{1}{2}$  eye diameter; last dorsal-fin spine distinctly longer than penultimate spine; prepelvic scales 9. Dorsal profile of head nearly uniformly convex; pectoral-fin rays 15–17 (usually 17, rarely 15); gill rakers 7–10 + 12–14; space between last dorsal-fin spine and first dorsal-fin ray notably less than space between last two dorsal-fin spines; depth of body 2.05–2.2 in SL; head length 2.35–2.5 in SL; snout short, 4.65–5.6 in HL; least depth of caudal peduncle 4.0–4.5 in HL. Color when fresh overall reddish, edges of scales red, the centers silvery pink.

**Distribution.** Known from the Andaman Sea to the South China Sea, Philippines to southern Japan, south to Australia, east to New Caledonia, Fiji, Tuvalu, and Vanuatu. Depth range 90–240 m.



**Figure 19.** *Ostichthys japonicus*, fresh photograph, BPBM 22269, 303 mm SL, Okinawa, Japan (J.E. Randall; from Plate 1C from Randall *et al.* [1982]).

## *Ostichthys kaianus* (Günther, 1880)

Deepwater Soldierfish

Figures 20 & 21.

*Myripristis kaianus* Günther, 1880: 39 (type locality, Kai Island, eastern Banda Sea, Indonesia).

*Myripristis (Holotrachys) guezei* Postel, 1962: 158, fig. 1 (type locality, Réunion, Mascarene Islands).

**Holotype.** BMNH 1879.5.14.150., Kai Island, eastern Banda Sea, Indonesia.

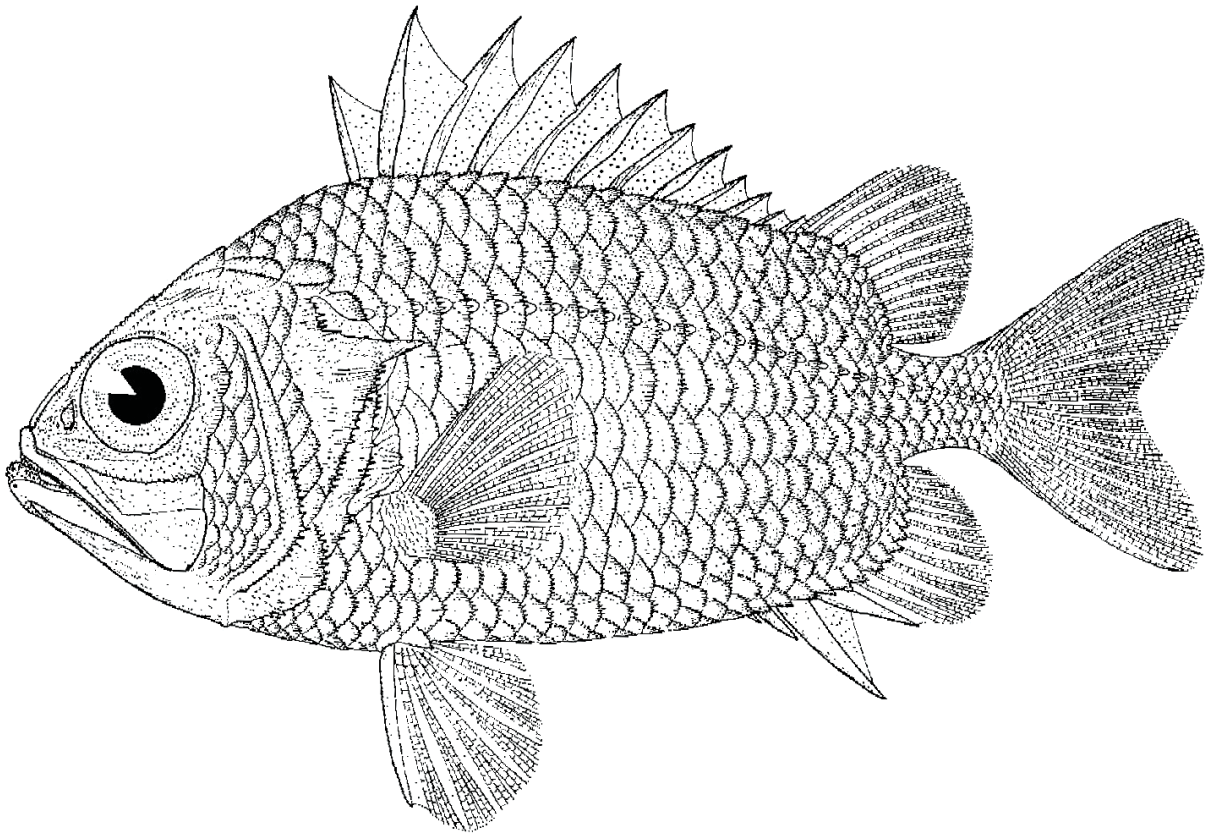
**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $2\frac{1}{2}$ ; origin of anal fin beneath spinous portion of dorsal fin; upper procurrent spiniform caudal-fin rays 4 and lower 3; no half scale anterior to first lateral-line scale; pectoral-fin rays 15–17 (usually 16); lateral-line scales 28–30 (usually 28, rarely 30). Dorsal profile of head slightly convex; gill rakers 7–9 + 14–16; last dorsal-fin spine about equal in length to penultimate spine; space between last dorsal-fin spine and first dorsal-fin ray about half as broad as space between last two dorsal-fin spines; depth of body 2.05–2.2 in SL; head length 2.15–2.4 in SL; snout short, 4.2–4.9 in HL; least depth of caudal peduncle 3.8–4.6 in HL. Color when fresh reddish with a series of relatively narrow silvery white dashes (middle of each scale with a horizontal streak nearly full-width of scale), forming whitish stripes on body.

**Distribution.** Ranges from Réunion to western Australia, Indonesia, and New Guinea, north to the South China Sea and Ryukyu Islands of Japan, east to Samoa. Depth range 182–640 m.

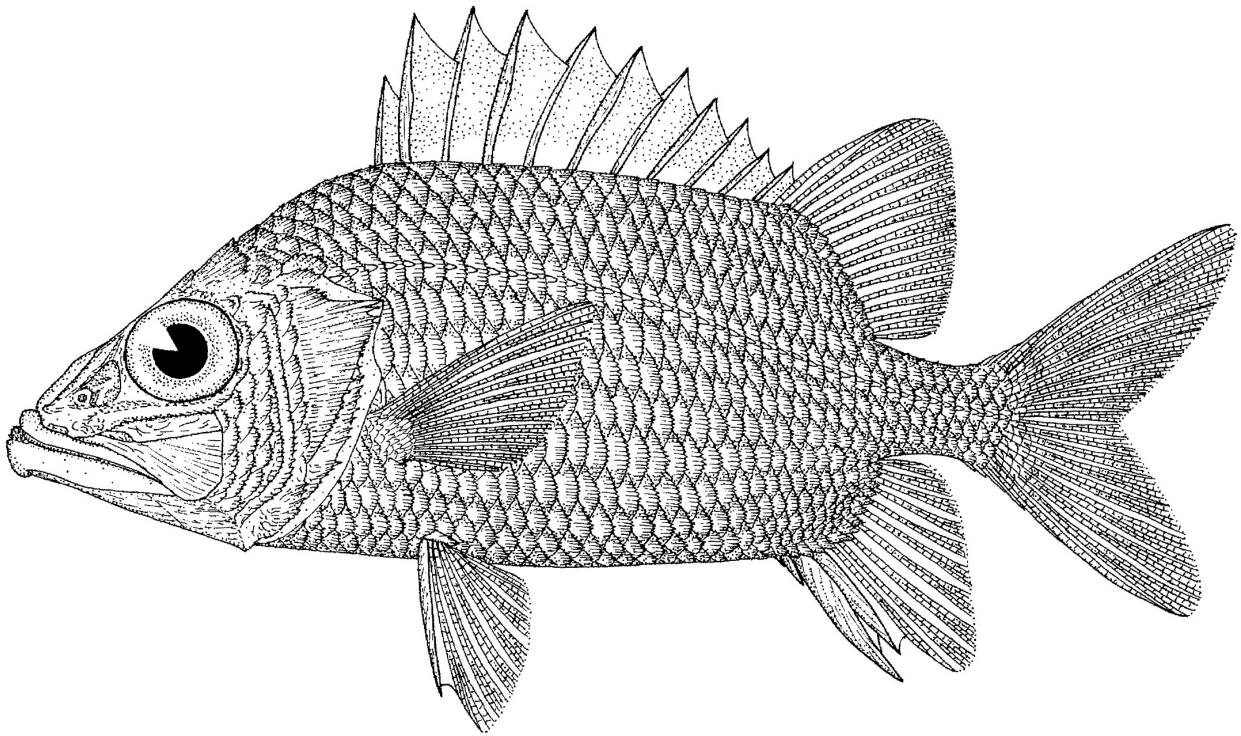


**Figure 20.** *Ostichthys kaianus*, fresh photograph, BPBM 10048, 208 mm SL, Okinawa, Japan (J.E. Randall; from Plate 2B from Randall *et al.* [1982]).





**Figure 21.** *Ostichthys kaianus*, HUMZ 40497, 179.0 mm SL, Okinawa, Japan (Randall *et al.* [1982]).



**Figure 22.** *Ostichthys ovaloculus*, holotype, BPBM 31643, 210.5 mm SL, Tahiti, French Polynesia (T. Shimizu; from Randall & Wrobel [1988]).

## *Ostichthys ovaloculus* Randall & Wrobel, 1988

### Ovaleye Soldierfish

Figures 22 & 23.

**Holotype.** BPBM 31643, 210.5 mm SL, Tahiti, French Polynesia.

**Diagnosis.** Scales above lateral line to base of middle dorsal-fin spines in 3½ rows; no spine at anterior end of nasal bone; no spine at corner of preoperculum; lateral-line scales 38; dorsal-fin elements XI,16 (XII for all other *Ostichthys* except also *O. delta*). Dorsal profile of head straight to above upper preopercular margin, then curving slightly onto nape; pectoral-fin rays 15; no half scale anterior to first lateral-line scale; gill rakers 6+13; last two dorsal-fin spines subequal; body depth 2.45 in SL; head length 2.4 in SL; snout long, 3.65 in HL; orbit elliptical, greatest diameter 3.05 in HL; suborbital series narrow, depth below eye 6.0 in orbit diameter. Color when fresh bright red with a silvery white blotch basally on each scale (whitish spots above lateral line partly obscured by preponderance of red coloration), scales on cheek and opercle largely silvery white.

**Distribution.** Known only from Tahiti in French Polynesia. Depth range to 300 m.



**Figure 23.** *Ostichthys ovaloculus*, fresh photograph, holotype, BPBM 31643, 210.5 mm SL, Tahiti, French Polynesia (L. Wrobel; Fig. 2 from Randall & Wrobel [1988]).



*Ostichthys sandix* Randall, Shimizu & Yamakawa, 1982

Vermilion Soldierfish

Figures 24 & 25.

*Ostichthys japonicus* (*non* Cuvier) in part, Fowler 1928: 97 (Honolulu, Hawai‘i, USA).

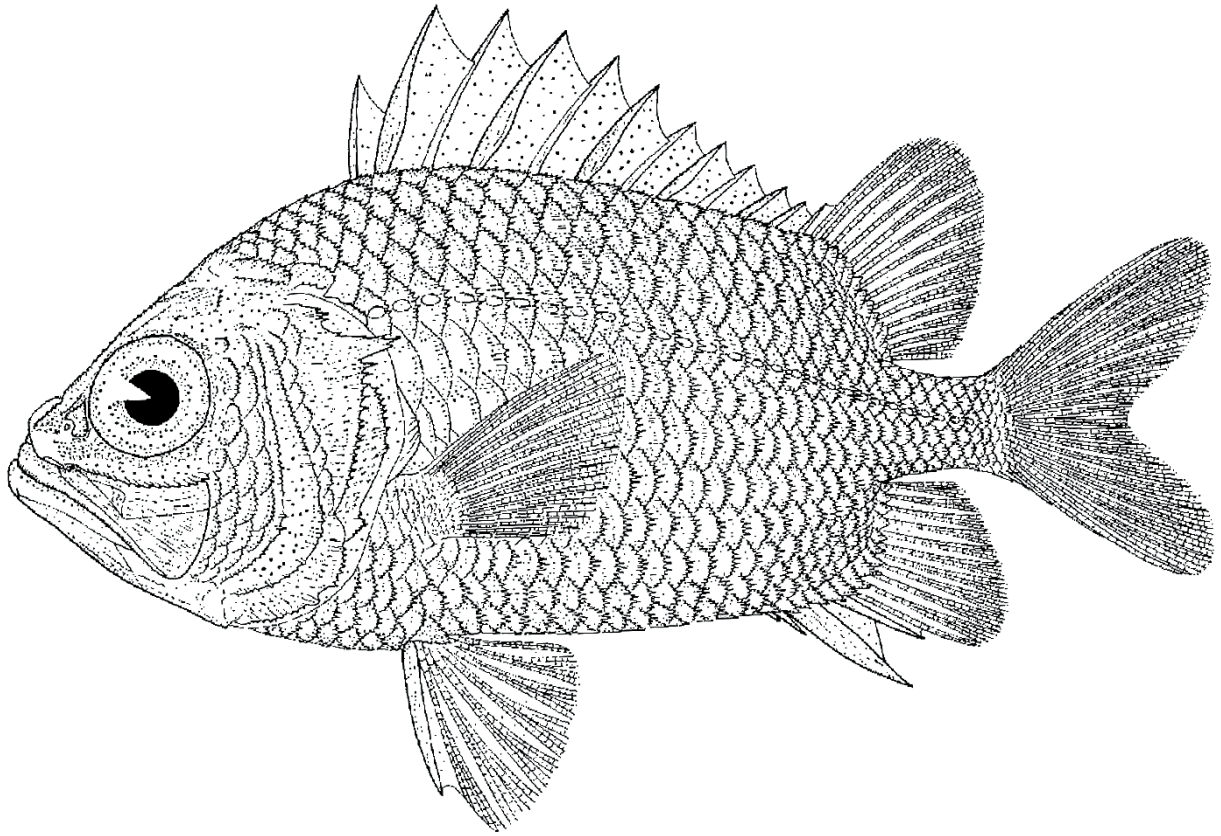
**Holotype.** BPBM 22708, 203.5 mm SL, Oahu, Hawai‘i, USA.

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $3\frac{1}{2}$ ; no spine at anterior end of nasal bones of adults or subadults; no enlarged spine at corner of preoperculum; dorsal-fin spines XII, lateral-line scales 28; height of second suborbital bone below center of eye 3.7–3.8 in eye diameter; median prepelvic scales 13; pectoral-fin rays 16 or 17 (usually 16); gill rakers 7–9 + 15 or 16; least depth of caudal peduncle 4.2–4.45 in HL; longest dorsal-fin spine 2.2–2.3 in HL. Dorsal profile of head nearly straight anteriorly, becoming convex on nape; last two dorsal-fin spines subequal; depth of body 2.0–2.1 in SL; head length 2.35–2.5 in SL; snout length 4.65–5.6 in HL. Color when fresh light red.

**Distribution.** Known from the Hawaiian Islands, Guam and the Northern Mariana Islands, and French Polynesia. Depth range 320–400 m.



**Figure 24.** *Ostichthys sandix*, fresh photograph, 204 mm SL, Maui, Hawaiian Islands (J.E. Randall).



**Figure 25.** *Ostichthys sandix*, holotype, BPBM 22708, 203.5 mm SL, Oahu, Hawaiian Islands; broken fins restored after paratypes (Randall *et al.* [1982]).



**Figure 26.** *Ostichthys sheni*, fresh photograph, holotype, NSYU 792, 119.1 mm SL, Chungchou, Taiwan (K.T. Shao; Fig. 14 from Chen *et al.* [1990]).



***Ostichthys sheni* Chen, Shao & Mok, 1990**

Shen's Soldierfish

Figures 26 & 27.

*Ostichthys japonicus* (*non* Cuvier) Shen 1988: 33 (Taiwan).

**Holotype.** NSYU 792, 119.1 mm SL, Chungchou, Taiwan.

**Diagnosis.** Scales above lateral line to base of middle dorsal-fin spines in 3½ rows; no spine at anterior end of nasal bones of adults or subadults; dorsal-fin elements XII,13; height of second infraorbital (below eye center) 3.71–5.42 in eye diameter; prepelvic scales 10–11; pectoral-fin rays 16–17; gill rakers 6–7 + 11–13; caudal-peduncle depth 4.7–4.9 in HL; longest dorsal-fin spine 1.9–2.3 in HL. Dorsal profile of head slightly convex; lateral-line scales 28–29 (mostly 29); last dorsal-fin spine slightly shorter than or equal to penultimate spine; preopercular scale rows 5; body depth 2.04–2.72 in SL; head length 2.41–2.49 in SL; snout short, 5.40–6.41 in HL; least depth of caudal peduncle 4.70–4.92 in HL. Color when fresh uniformly light red.

**Distribution.** Known only from Taiwan. Depth not recorded.



**Figure 27.** *Ostichthys sheni*, preserved photograph, paratype, THUP 00478, 201.9 mm SL, Taichi, Taiwan (D.W. Greenfield).

## *Ostichthys sufensis* Golani, 1984

### Red Sea Soldierfish

Figures 5 & 28.

*Ostichthys hypsipterygion sufensis* Golani, 1984: 98, fig. 1 (type locality, Gulf of Aqaba, Red Sea).

**Holotype.** HUJF 11286, 141.0 mm SL, Nuweiba, Egypt, Gulf of Aqaba, Red Sea.

**Diagnosis.** Scales above lateral line to base of middle dorsal-fin spines in 3½ rows; no spine at anterior end of nasal bones of adults or subadults; lateral-line scales 28; dorsal-fin elements XII,13; height of second suborbital bone below center of eye about 1/3 of eye diameter; last two dorsal-fin spines subequal; median preopercular scales 14; pectoral-fin rays 15; gill rakers 7 + 13; snout length 4.85–5.0 in HL; anterior ends of palatine tooth patches reach level of center of vomerine tooth patch (Fig. 5). Dorsal profile of head nearly straight, becoming slightly convex on nape; last two dorsal-fin spines subequal; depth of body 2.2 in SL; head length 2.1–2.3 in SL; least depth of caudal peduncle 4.59–4.85 in HL. Color when fresh light red, each scale on body with a silvery white dash, forming longitudinal white broken lines.

**Distribution.** Known only from the Gulf of Aqaba, northern Red Sea. Depth up to 300 m.



**Figure 28.** *Ostichthys sufensis*, fresh photograph, Red Sea (D. Darum, courtesy D. Golani).



## *Ostichthys trachypoma* (Günther, 1859)

### Bigeye Soldierfish

Figures 29–32.

*Myripristis trachypoma* Günther, 1859: 25 (type locality, Cuba and West Indies).

*Myriopristis fulgens* Poey, 1860 [note misspelling]: 160 (type locality, Cuba).

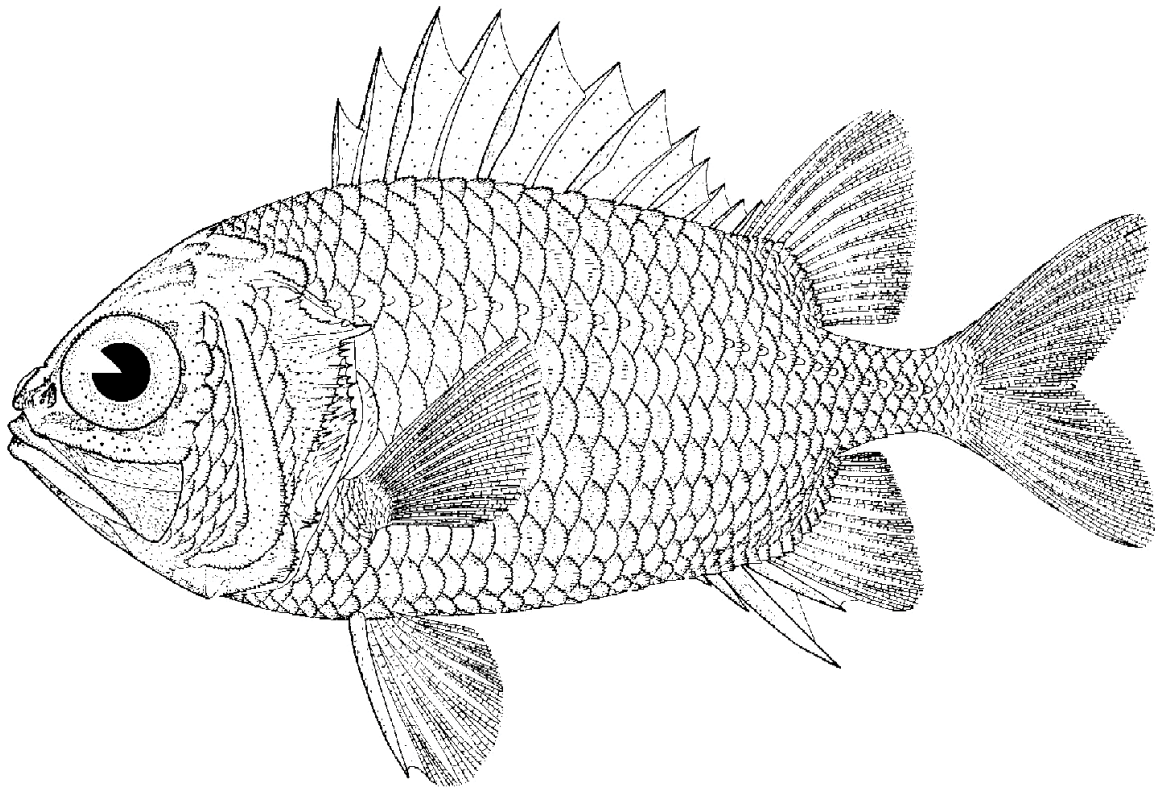
**Syntypes.** BMNH 1842.12.12.66 & BMNH 1859.3.14.22, Cuba and West Indies.

**Diagnosis.** Scales above lateral line to midbase of spinous portion of dorsal fin  $2\frac{1}{2}$ ; origin of anal fin beneath spinous portion of dorsal fin; upper procurrent spiniform caudal-fin rays 4 and lower rays 3; a half scale anterior to upper half of first lateral-line scale; dorsal profile of head moderately convex; pectoral-fin rays 14–16 (usually 15); lateral-line scales 28–30 (usually 29); gill rakers 8–11 + 14–17; last dorsal-fin spine longer than penultimate spine and closely applied to soft portion of fin; snout short, 4.6–5.6 in HL. Depth of body 2.0–2.2 in SL; head length 2.3–2.5 in SL; least depth of caudal peduncle 4.0–4.5 in HL. Color when fresh reddish to silvery ventrally, with red stripes along the body following scale rows and usually narrower than the silvery intervening stripes. Juveniles mostly silvery with red stripes limited to upper back (Fig. 31).

**Distribution.** Found in the western Atlantic Ocean from New York south along the U.S. coast and widely in the Bahamas. Ranges into the eastern Gulf of Mexico from Louisiana to the Florida Keys and northwestern Cuba. Occurs throughout the Caribbean except for two sectors: the northwest quadrant in Yucatan and the Bay of Honduras and the Lesser Antilles. Ranges south to Maceió, Alagoas State, Brazil. Depth range 37–550 m (Robertson & Van Tassel 2015).



**Figure 29.** *Ostichthys trachypoma*, fresh photograph, 75 mm SL, Curacao (D.R. Robertson & C.C. Baldwin).



**Figure 30.** *Ostichthys trachypoma*, USNM 24942, 147.1 mm SL, Cuba; broken fins restored after paratypes (Randall *et al.* [1982]).



**Figure 31.** *Ostichthys trachypoma*, fresh photograph, 45 mm SL, Curacao (D.R. Robertson & C.C. Baldwin).





**Figure 32.** *Ostichthys trachypoma*, underwater photograph, Curacao (D.R. Robertson & C.C. Baldwin).

**Remarks.** Of the seven previously described species of *Ostichthys* with  $3\frac{1}{2}$  scales above the lateral line to the middle of the spinous portion of the dorsal fin, only three were known to occur in the Indian Ocean: the wide-ranging *O. acanthorhinus* recorded from the Red Sea and the northern Indian Ocean from the Arabian Sea to Myanmar, the Andaman Islands, and throughout Indonesia to the northern coast of Australia; *O. japonicus* in the Andaman Sea; and the apparently endemic *O. sufensis* found only in the northern Red Sea, in the Gulf of Aqaba. The two new species described here are found sympatrically with *O. acanthorhinus* off the coast of Myanmar. Notably, the two new species differ from *O. acanthorhinus* in many characters (see comparisons in the new species' descriptions).



**Figure 32.** *Ostichthys* sp., fresh photograph, Fiji (R.R. Thaman).





**Figure 33.** *Ostichthys cf. japonicus*, 335 mm SL, Myanmar (P.N. Psomadakis).

**Additional Specimens.** While preparing this review we became aware of photographs of two additional specimens that subsequently have been lost. One of these is of a specimen caught by a deepwater-snapper fishing boat in Fiji and photographed by Randolph R. Thaman (Fig. 32). The specimen was stored in a freezer at the University of the South Pacific, but then disappeared. The specimen appears to be of an undescribed species, having only ten dorsal-fin spines and a very long opercular spine.

The second specimen was a 335-mm SL soldierfish trawled on the Myanmar survey off the Tanintharyi coast, (12°2.73' N, 96°57.75' E) at 260 m depth, but not retained (Fig. 33). We consider this specimen to be *Ostichthys cf. japonicus* because of some slight differences in the relative lengths of the dorsal-fin spines and the thickness of the second anal-fin spine compared to *O. japonicus*; however, this may be intraspecific variation and voucher specimens are needed for verification. The following counts for this specimen were taken onboard: dorsal-fin elements XII,13; anal-fin elements IV,11; pectoral-fin rays 17; pored lateral-line scales 29; and 3½ scale rows above the lateral line.

## Acknowledgments

Hiroyuki Motomura, Kagoshima University Museum, arranged for the loan of a paratype of *Ostichthys sheni*. Gina Ralph, IUCN, kindly provided a draft copy of the distributions of *Ostichthys* species. Daniel Golani allowed us to use a photograph of *O. sufensis*, and photographs of *O. trachypoma* were graciously provided by D. Ross Robertson and Carole C. Baldwin, taken as part of the Smithsonian's Deep Reef Observation Project (DROP). Hamid Badar Osmany provided photographs of *O. acanthorhinus*, and Randalf Thaman provided a photograph of a specimen of *Ostichthys* from Fiji. We thank the Roger Bills (SAIAB), and Arnold Y. Suzumoto and Loreen R. O'Hara of the Bishop Museum for assistance with specimens. The EAF-Nansen Project is acknowledged for giving us the opportunity to work with myripristine material collected on the R/V *Dr. Fridtjof Nansen* during the Myanmar survey. Many thanks also to Jens-Otto Krakstad and Oddgeir Alvheim (Institute of Marine Research, Norway), Htun Thein (Department of Fisheries, Myanmar), and to all the crew and people involved in getting the Myanmar *Nansen* survey running. The manuscript was reviewed by two anonymous reviewers.

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